Contradictions of "Doing Development":
A Structuralist Framework

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Abstract: We construct an economy composed of modern/formal sector and the government and situate it within an exogenously given traditional economy consisting of farm and non-farm activities. The particularities of interactions between formal sector, government and agriculture on one hand and between farm and non-farm sectors on the other are discussed and the departures from the literature are identified. Next, we propose, for accumulation and growth in formal sector a large part of agriculture is modernized and thus there is drain of resources from the traditional economy. This expropriates a sizeable section of non-farm population from the means of consumption and reproduction. Consequently, a vast "surplus population" is created endogenously, which remains outside the domain of capital. This phenomenon points at a fundamental conflict between the modern/formal sector and the traditional non-farm activities in presence of agricultural-supply-constraint, which was missed out in the orthodox "dual economy" literature proposing only a frictionless transition. Next, following the dictum of "development management" we assume that this "surplus population" is rehabilitated in the newly "discovered" and valorized informal sector. But, contrary to the mainstream position which asserts a symbiotic relation between this informal sector and other sectors of a less-developed-economy we propose that, this promotion of informal activities either generates formal – informal contradiction or engenders a conflict within the non-modern economy in the form of contradiction between the valorized informal sector and the residual petty non-farm activities. Hence, the projection of informal sector as a cushion mitigating unemployment is nothing but a myth.

JEL classifications: O11, O17, O20, Q18.

Key words: "Realization Crisis", "Domestic Exports", Farm – Non-farm Symbiosis, Modern – Traditional Conflict, Expropriation and Informal Sector, Formal – Informal Conflict, Informal – Non-farm Conflict, Agricultural Supply-constraint.

I. INTRODUCTION

During the last few decades the discourse on development has been experiencing a shift away from the era of "Lewisian path" and "big push". It is increasingly being recognized that capital accumulation and growth based on modern technology is unable to provide livelihood for the vast majority of third world population. Consequently, the focus of development is moving away from the capital-centric growth-centric trickle down trajectory towards targeted intervention with the intentions of poverty alleviation and of ensuring basic "entitlement" and "capability" (Sen, 1988). Simultaneously, there

is a paradigm shift from "development planning" to "development management". Thus, while the traditional development economics tried to solve the problem of "modern – traditional dualism" through expansion of modern sectors, the current discourse of development management directly focuses on the traditional segment as an object of governance and proposes its incorporation not into the modern sectors rather into the globalized domain of "free market" which is supposed to mediate a "modern – traditional symbiosis".

However, it is argued by the critiques that the so called route of "progress" based on accumulation and growth in modern industry and services not only excludes but also marginalizes the indigenous population surviving on the subsistence/traditional economy by expropriating them from the means of consumption and reproduction. The long run course of "modernization" itself creates the mass of "development refugee"/ "marginalized" the "surplus population" (Sanyal, 2007) which, however, remains barred from capitalistic growth process. Thus, according to them "modern – traditional symbiosis" is nothing but a myth and the course of "development" endogenously produces "marginalization".

It is also opined by these critiques that, faced with such an endogenous process of creation of "modern – marginal dualism" the international agencies like UN, ILO and the World Bank are advocating for active government intervention to govern/contain and to rehabilitate the marginalized "surplus humanity" (Davis, 2004).[1] This departure in the orthodox development discourse becomes clear once we identify the recent "discovery" of the "informal sector" and portrayal of this sub-economy in a positive light (Mellor, 1976; Tokman, 1978; Mead, 1984; Saith, 1992; Ranis and Stewart, 1993, 1994; UN, 1999; Bangasser, 2000; Lanjouw and Lanjouw, 2001; UN-Habitat, 2003; Maloney, 2004; see also Sanyal, 2007 for a critical review). As a result of such a view of informal sector present day governments of the third world are protecting, and promoting this sector to rehabilitate the "excluded" and the "marginalized" so that they could participate in the "globalised free market".[2]

Our primary task in this paper is to formulate a macro-framework along structuralist lines to capture the fundamentals of the foregoing discussion. However, we intend to interrogate some of the key propositions of the orthodox development economics put

forward during the last half a century. This critical enquiry brings to the fore certain fundamental contradictions arising out of the prescriptions of the mainstream development discourse. Contrary to the claims of both the "frictionless model of transition to capitalism" and the model of "market-based development management" we try to show that "doing development" cannot be free from conflicts of interests. To critically evaluate these orthodox prescriptions we need to construct an appropriate theoretical set-up.

We construct an economy composed of modern/formal sector and the government and situate it within an exogenously given traditional economy consisting of petty farm and non-farm activities. Next, following the prescriptions of the orthodox dual economy models, we assume, for growth of formal sector a large part of agriculture is modernized. However, this implies a drain of resources from the traditional economy to feed the process of accumulation in the modern sector. This resource-squeeze endangers the very existence of the petty non-farm economy. Consequently, a vast surplus population is created endogenously, which remains outside the domain of capital. Next, following the dictum of development management we assume that this endogenously produced (displaced) surplus population is rehabilitated in the newly discovered and valorized informal sector. But, contrary to the orthodox position which asserts a complementary relation between the formal and informal sectors we propose that, this promotion of informal activities and thereby rehabilitation of surplus population either generate formal – informal contradiction or engender a conflict within the non-modern economy in the form of contradiction between the valorized informal sector and the residual petty non-farm activities.

II. A MODEL OF MODERN-TRADITIONAL CONFLICT: CREATION OF INFORMAL SECTOR

First, we construct an economy composed of modern/formal sector and the government and situate it within an exogenously given traditional sector consisting of agriculture and non-farm activities.

2.1. Agriculture – Formal Sector Interaction: Role of the Government

2.1.1. Review of Literature

(a) Demand-side linkage:

There is a vast literature which argues that agriculture provides "home market" for the formal industrial sector (FS) and thereby mitigates its "effective demand problem" through the following channels:

i) Inter-sectoral redistribution of income. This redistribution is initiated by a movement in the terms of trade (t-o-t) between agriculture and FS (Mitra, 1977; Bagchi, 1988).

ii) Mutual exchange of surpluses between FS and agriculture (Mundle, 1977; Kaldor, 1984).

(b) Supply-side linkage:

Agriculture providing supply-side support for FS, absence of which restricts accumulation:

i) Supply of wage-goods and raw materials for FS are important contributions of agriculture. These elements are supplied to FS through simple inter-sectoral exchange (Kalecki, 1954; Kaldor, 1976).

ii) Food-constraint pushes up food-price in the face of growing demand from FS, which leads to either wage-price upward spiral in FS (Kalecki, 1954) or deterioration of t-o-t for FS leading to "profit squeeze" (Ricardo, 1815; Preobrazhensky, 1926; Ranis and Fei, 1961).

Thus, these demand and supply side channels of agriculture – formal sector interactions operate either through t-o-t variation or through mutual exchange.

2.1.2. Our Departures

(a) We consider a situation where all the contending groups (capitalists and workers of FS and the farmers) form separate lobbies and all lobbies are equally strong. In such a situation these classes can collude, the political expression of which is a "coalition government". In a regime of "coalition politics", each of the contending groups tries to maintain its relative socio-economic position. Consequently, any process initiating redistribution is blocked through bargaining. Therefore, we assume rigidity of formal

sector real-wage and product-wage and hence, rigidity of agriculture – formal sector t-o-t as well.[3]

(b) We assume absence of any type of capital flow between agriculture and FS. Essentially, it means balanced trade between agriculture and FS. Implicitly, this assumption indicates that none of the sectors is growing at the cost of the other. We assume balanced trade to remove the possibility of extraction of (trade) surplus by any of the sectors from the other. However, it could be shown clearly that given our first departure this is only a simplifying one.

(c)   Now we come to our third contention. Our claim is that equilibrium exchange with balanced trade between agriculture and FS cannot create any extra demand for FS. Accordingly agriculture cannot be a "home market" for FS boosting its "effective demand". In fact, the popular perception is that a bumper crop facilitates industrial revival because it leads to increased income in agrarian sector raising demand for FS goods. The argument is based on an implicit assumption of constant t-o-t. The assumption is necessary because a bumper crop, ceteris paribus, will change the t-o-t against agriculture. This, in turn, will reduce the purchasing power of agricultural sector given an inelastic food-demand from FS. Even if we allow for the assumption of constant t-o-t, the increased agricultural output is translated into actual additional purchasing power only after it is sold to FS. Moreover, formal sector purchases of the additional agricultural output mean a leakage from the expenditure on FS good incurred by that sector itself. This reduces demand for FS output. On the other hand, when the additional income that accrues to agriculture through sale of additional amount of food to FS is, in turn, spent on FS products, demand for FS commodity rises. However, ultimately there is no impact on the demand for FS commodity, as the two effects wash off.

If we put together all these departures and contentions, it implies complete absence of all the agriculture – FS demand-side interactions as discussed in the literature.

2.1.3. Kalecki: Concept of Domestic Exports

We assume, for the time being that the primary problem for FS is the lack of "internal effective demand" while agricultural supply to FS is sufficient. In such a situation, the

only option left for the expansion of the demand-constrained FS, in a closed economy, is the path of government intervention given agriculture's inability to provide the "external market" for FS under the conditions designed by our departures.

Kalecki quite correctly formulated the role of "external market" and "home market" in mitigating the demand problem of industry (Kalecki, 1934). He pointed out in clear terms that the extent of foreign market relevant in the context of effective demand problem is not given by the level of export but by that of export-surplus. However, there are practical problems in sustaining export-surplus vis-à-vis rest of the world. We therefore shift our focus from external market to home market.

Home market for industry is defined as any non-industrial sector within the national economy vis-à-vis which domestic industry can enjoy "export-surplus". The agrarian sector cannot be the home market since it suffers from the problem of financing its import-surplus (vis-à-vis industry). A well-known fact is that the agrarian sector lacks the power to issue any financial asset like shares and bonds.[4] Hence, the government sector is the proper candidate to play the role of home market. It can purchase goods from the industrial sector given its monopoly power over printing money. In its trade with government sector domestic industry "exports" goods against the "import" of money. This export which is, by definition, an export-surplus is what Kalecki terms as "domestic exports".

2.1.4. Kalecki: Agricultural Supply-constraint

Kaleckian analysis rules out agriculture as a possible home market for industrial product. However, this does not mean that he considers agriculture as totally unimportant in the context of industry. There is clear recognition of agriculture as the source of supply of wage-good or "food" to the industrial sector. If agricultural production fails to grow at the required rate, persistent excess demand for food will continually increase food-price which in turn, will lead to an upward wage–price spiral in the industrial sector (Kalecki, 1954).

Kalecki's concepts of domestic export and of agricultural supply-constraint constitute our point of departure. The two concepts are treated by Kalecki in an isolated manner.

Our task is to unite the two in a single frame of analysis to capture agriculture – FS interaction.

2.2. Farm – Non-farm Inter-linkage: The Traditional Economy

Next, we discuss the interaction between agriculture and the traditional non-farm sector (NFS) which constitute the traditional economy. We assume that this traditional economy exists exogenous and prior to the so called phenomenon of modernization of the post-colonial era. Thus, contrary to the orthodox "dual economy" set-up where traditional sector consists of mainly agriculture our economy contains a sizeable section of population engaged in non-farm activities.[5] In this context we bring in the phenomenon of modernization.

We argue following the traditional "dual economy" literature (e.g., Ranis and Fei, 1961) that, to support the process of accumulation and growth in FS a large part of agriculture is segregated from the traditional economy through rapid mechanization and use of modern technology embodied in strategic inputs produced in FS. But, mainly the large farmers are able to take advantage of this process of integration of FS and modernized agriculture and the weaker groups are marginalized.[6] Against the cheap and abundant supply of agricultural produce to FS, the rich farmers receive subsidized finance and inputs and also assured market. Thus, an alliance between rich farmers and formal industrial capital is forged which is also beneficial for the elite working population attached with FS.[7]

However, this whole process not only leaves out the largest section of the population engaged in petty production based NFS but also expropriates them from their means of production and consumption. Furthermore, modernization of traditional agriculture destroys the home market for NFS. Thus, the process of modernization of a part of the economy creates the mass of dispossessed – the surplus population and thereby we have FS – NFS conflict.

2.3. Basic Features and Notations of our Economy
2.3.1. The Features are as follows:
(a) Four sectors: a capitalistic FS, a non-capitalistic agricultural sector producing "food", a non-capitalistic NFS and the government sector.

(b) FS is characterized by excess capacity, unemployment and mark-up pricing. Price is cost-determined and output is demand-determined.

(c) All profits in FS are saved whereas all wages are consumed. A part of wage-income is spent on food so that there is the possibility of FS facing an agricultural supply-constraint.

(d) A fixed marketable surplus of food-grain represents the agricultural supply-constraint for FS as well as for NFS. Consequently, we have demand-determined price for food.

(e) Contrary to FS with capital-labor dichotomy and accumulation-motive as the driving force for production, NFS is characterized by consumption-motive,[8] self-employment and absence of fixed capital.[9] Moreover, there is surplus-labor in NFS. NFS is essentially consisted of "petty commodity producers". It is a subsistence sector where there is no net surplus over and above the requirements for food and non-food consumption at subsistence levels and for "simple commodity reproduction" without expansion of scale.

(f) NFS is self-sufficient in terms of both implements and non-food consumption. However, like FS it has to depend on agriculture for food which is obtained with the proceeds received through sale of net-output (net of requirements for self-consumption and reproduction) to agriculture itself.

(g) Aggregate agricultural income is earned by selling marketable surplus in the (undifferentiated) food market, which is purchased by the agents of both FS and NFS at the single open market price. This income, in turn, is spent on the products of both FS and NFS. The division depends on the relevant terms of trade,[10] cropping-pattern[11] and land-distribution pattern.[12]

(h) We have balanced trade between agriculture and NFS, on one hand and between agriculture and FS on the other.[13]

(i) The government purchases FS products by money creation. It constitutes the "domestic exports" for FS and relaxes the "effective-demand-constraint" by providing the "home market".

(j) The distribution of income among different classes is determined exogenously and there is social resistance to any change in this pattern.[14]

(k) We assume away any interaction between FS and NFS. This is a simplifying assumption. As a very little part of NFS is able to interact with the sophisticated FS this seems to be a plausible supposition.

(l) We restrict to a short-run static analysis and a closed economy set-up.

2.3.2. Notations to be used are:

(i) Y: Level of FS output. (ii) p_i: Price of FS output. (iii) τ: Mark-up over prime (wage) cost in FS. (iv) w_m: Money-wage rate in FS. (v) L: Employment in FS. (vi) l: Labor-output ratio in FS. (vii) I: Real investment in FS in terms of FS output. (viii) g: Real government expenditure on FS in terms of FS output. (ix) G: Nominal government expenditure on FS. (x) F: Aggregate supply of marketable surplus of food to FS and NFS. (xi) a_f: Per capita food-demand in FS. (xii) p_f: Food-price. (xiii) D_f: Aggregate food-demand from FS. (xiv) W: Total wage-bill of FS in terms of FS output. (xv) α_u: Fraction of aggregate agricultural income or that of aggregate marketable surplus of food transacted with NFS.[15] (xvi) Y_u: Level of NFS output. (xvii) p_u: Price of NFS output. (xviii) L_u: Employment in NFS. (xix) l_u: Labor-output ratio in NFS. (xx) β_u: Fraction of NFS output used for self-consumption and reproduction. (xxi) S_u: Aggregate net-output of NFS used to purchase food. (xxii) D_u: Aggregate demand for NFS output. (xxiii) a_{fu}: Per capita food-demand in NFS.

2.4. Working of our Model

The features (a) to (l) of section (2.3.1) imply the following formulations:

2.4.1. Interaction between FS, Agriculture and the Government

Excess capacity in FS implies a given l, and we take l=1.

Hence, L=Y   … … …(1)

Using equation (1), mark-up pricing in FS is represented as:

$p_i=(1+\tau)w_m$ … … …(2)

τ is a positive constant.

Workers' demand for a targeted real-wage is given by:

$w_m/p_f=\text{ß}$ … … …(3)

ß is a positive constant.

From equations (2) and (3), we write the following:

Product-wage in terms of FS output is,

$(w_m/p_i)=1/(1+\tau)=\alpha$ … … …(3.1)

Terms of trade between agriculture and FS is,

$(p_f/p_i)=\beta/(1+\tau)=\theta$ … … …(3.2)

α and θ are exogenously determined.

The basic income-expenditure equation for FS can be written as:

Total FS output =

(Total FS wage-bill in terms of FS output) [16]

+(Total FS investment in terms of FS output)

+(Total government expenditure on FS in terms of FS output) … … …(4)

We take (autonomous) real investment in FS and nominal government expenditure on FS output (i.e. government budget) as exogenously given, i.e.,

$I=I^0$ … … …(5)

$G=G^0$ … … …(6)

Investment is governed by long-run profit expectations which are completely inelastic with respect to current changes in production.

Now, substituting equations (5) and (6) in equation (4) and using relevant notations we obtain:

$Y=W+I^0+G^0/p_i=(w_m/p_i).L+I^0+(p_f/p_i).(G^0/p_f)$ … … …(7)

Using equations (1), (3.1) and (3.2), equation (7) can be rewritten as:

$Y=\alpha.Y+I^0+\theta.(G^0/p_f)$ … … …(7.1)

Given equation (1), equation (7.1) can be written as:

$L=\alpha.L+I^0+\theta.(G^0/p_f)$ … … …(7.2)

Solution of (7.2) gives,

$L^*=[I^0+\theta.(G^0/p_f)]/(1-\alpha)$ … … …(8)

Now, food-demand per worker employed in FS depends on wage-share and t-o-t and it can be expressed as:

$a_f=a_f(w_m/p_i, p_f/p_i)$ … … …(9)

$a_{f1}>0, a_{f2}<0$.

Using equations (3.1) and (3.2) we get,

$a_f(w_m/p_i, p_f/p_i)=a_f^0$ … … …(10)

a_f^0 is a positive constant.

Hence, aggregate food-demand from FS can be written as:

$D_f=a_f^0.L$ … … …(10.1)

Substituting from equation (8):

$D_f=a_f^0.[I^0+\theta.(G^0/p_f)]/(1-\alpha)$ … … …(10.2)

    There is an inverse relation between food-price and aggregate food-demand from FS, which gives us the negatively sloped D_f curve of figure 1.
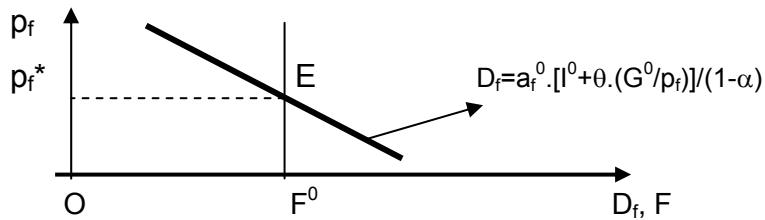

Figure 1: Food-market equilibrium representing agriculture-FS interaction.

Now, the assumption of a fixed marketable surplus of food[17] can be written as:

$F=F^0$ … … …(11)

Using equations (10.2) and (11), food-market equilibrium condition is:

$F^0=D_f=a_f^0.[I^0+\theta.(G^0/p_f)]/(1-\alpha)$ … ... …(12)

Equation (12) determines the equilibrium food-price p_f^*. It can be represented in a simple food-market demand-supply diagram (figure 1). The equilibrium food-price, p_f^* determines the equilibrium money-wage in FS, i.e. w_m^* given equation (3). This w_m^*, in turn, determines equilibrium price of FS output, i.e. p_i^* given equation (2). Consequently, the equilibrium size of the real government expenditure on FS output is endogenously determined as:

$g^*=G^0/p_i^*$ … … …(12A)

Proposition I: Given an exogenous food-supply-constraint and exogenously determined income distribution, the size of real domestic exports or that of the home market for FS is endogenously determined.

Corollary:

It clearly follows that given the amount of per capita food consumption in FS (i.e., a_f^0), bumper harvest creates a potential for FS expansion. However, realization of this potential requires an adequate increase in the value of real domestic exports. Such a case can be presented in terms of Figure 2.
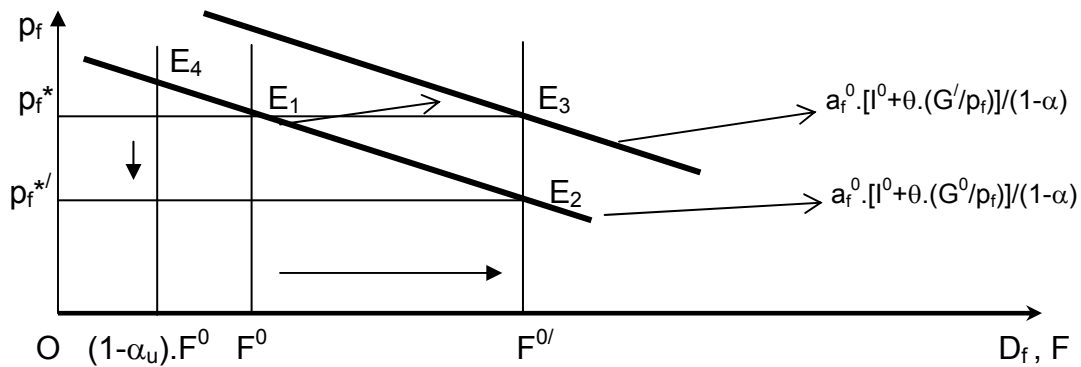

Figure 2: Effects of bumper harvest on FS represented through food-market equilibria

Consider a case of downward flexibility of FS money-wage: Let us assume a bumper harvest raising the value of F to say, $F^{0/}$. As a result equilibrium food-price falls from p_f^* to $p_f^{*/}$. Given the distributive factors, this reduces w_m and subsequently, p_i also falls. This, in turn, expands the size of real domestic exports given $G=G^0$. Simultaneous increases in food-supply to and demand for FS induce its expansion (along with a process of general deflation). Thus we get the movement of equilibrium position from E_1 to E_2.

However, with downward rigidity of w_m, a fall in p_f due to bumper harvest does not automatically increase the real domestic exports. In that case, adequate expansion of home market can only be achieved by a proper expansion of nominal government expenditure. The required expansion is such that the equilibrium position moves to E_3.

Proposition II: Bumper harvest creates the potential for FS expansion from the supply-side. However, on the demand-side, realization of this potential requires an adequate

expansion of home market through increase in the value of real domestic exports. Such an expansion can be achieved by price-wage fall in case of downward flexibility of money-wage. A proper expansion of nominal government expenditure, on the other hand, is required in case of downward rigidity of money-wage.

2.4.2. Interaction between Agriculture and NFS

First, from the condition of labor-surplus NFS we can specify constancy of per capita food-demand at the minimum subsistence level. Hence,

$a_{fu} = a_{fu}{}^0$

Moreover, the absence of (limiting) capital implies,

$l_u = l_u{}^0$, a constant.

We also assume without loss of generality,

$\beta_u = \beta_u{}^0$, a constant.

All these combined together indicate that the real average cost of production in NFS due to food and non-food consumption and due to use of implements and raw materials is structurally determined and is constant.

Furthermore, as there is no surplus (i.e., no surplus value for accumulation) in NFS the food and non-food consumption-cost and implements and raw materials cost solely determine the NFS product-price. Hence, price formulation in NFS can be expressed as,

$p_u = p_f . a_{fu}{}^0 . l_u{}^0 + p_u . \beta_u{}^0$

Rearranging,

$(1 - \beta_u{}^0) . p_u = p_f . a_{fu}{}^0 . l_u{}^0$

Thus, the value of net-output in NFS is determined only by the subsistence cost or food-cost.

Now assuming, $l_u{}^0 = 1$ for simplicity,

$p_u / p_f = a_{fu}{}^0 / (1 - \beta_u{}^0)$ … … …(i)
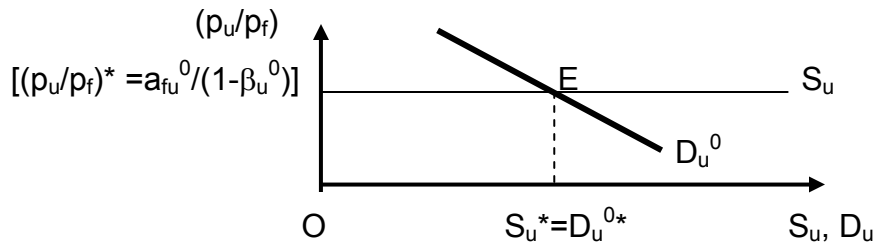
$$[(p_u/p_f)^* = a_{fu}^0/(1-\beta_u^0)]$$

Figure 3: NFS equilibrium representing agriculture-NFS interaction

Therefore, we have a given agriculture-NFS t-o-t. Moreover, at this given t-o-t the supply of net output, S_u will be perfectly elastic as there is no limiting factor within NFS. The S_u curve will be horizontal on the "S_u–p_u/p_f" plane (Figure 3). Furthermore, the given t-o-t implies that a particular amount of food-supply to NFS always induces a definite volume of inter-sectoral trade. Hence, the level of production in NFS is set solely by the volume of food supplied to this sector. As the perfectly elastic S_u and hence Y_u and L_u are demand-determined, the equilibrium values of these variables are solely set by the portion of marketable surplus of food or more precisely, that of agricultural income transacted with NFS. Stated otherwise, demand for food from NFS is perfectly elastic. Agriculture is not facing any demand problem so far as NFS is concerned. There is no "realization problem" for agriculture so far as its interaction with NFS is concerned.

Proposition III: Interaction between agriculture and NFS is found to be distinctly different from that between agriculture and FS. While in the latter case there remains a possibility of realization crisis for agriculture, the former relation is free from any such problem even if there is no government intervention and the t-o-t is given.

Mere supply of agricultural commodities does not automatically imply its sale in capitalistic formal economy, as production in this sector is organized by the capitalists with accumulation motive and not for consumption per se. Contrarily, against food-supply to NFS agriculture simultaneously demands NFS output, as the farmers participate in production for satisfaction of need. On the other hand, this food-supply also induces production in NFS as the petty non-farm producers' sole objective is also consumption, the most important item being food. Hence, marketable surplus of food gets easily absorbed in NFS.

Next, from our preceding analysis we know that the value of aggregate demand for NFS output is equal to the part of agricultural income spent on it or the value of marketable surplus of food transacted with NFS. Hence,

$$p_u.D_u=\alpha_u.p_f.F \qquad\qquad\qquad ………(ii)$$

Now using feature (g) of section (2.3.1) and notation (xv) of section (2.3.2) we can formulate:

$$\alpha_u=\alpha_u(p_f/p_u, p_f/p_i, n_1, n_2) \qquad\qquad ………(iii)$$

$\alpha_{u1}>0$, $\alpha_{u2}<0$ and $\alpha_{u3}>0$, $\alpha_{u4}>0$.

Here the exogenous factor 'n_1' is the land-distribution parameter, an improvement of which implies a more equitable pattern that helps NFS to grow.[18] However, we assume that n_1 is set say at n_1^0. On the other hand, "n_2" signifies cropping-pattern. Higher the extent of crop-diversification lower is the value of n_2 and hence, a squeeze on NFS (see below). However, we assume that n_2 is set say at n_2^0.

Moreover, using equation (3.2) in equation (iii) we get:

$$\alpha_u=\alpha_u^0(p_f/p_u, \theta, n_1^0, n_2^0)=\alpha_u^0(p_f/p_u) \qquad ………(iv)$$

Rearranging equation (ii) and using equation (iii) we get,

$$D_u=(p_f/p_u).\alpha_u(p_f/p_u, p_f/p_i, n_1, n_2).F \qquad ………(v)$$

Hence, generalizing we get,

$$D_u=D_u(p_u/p_f,\alpha_u, F) \qquad\qquad ………(vi)$$

Using equation (iv) and $F=F^0$ (equation 11) we have from equation (vi),

$$D_u=D_u^0(p_u/p_f, \alpha_u^0, F^0) = D_u^0(p_u/p_f) \qquad ……… (vi)'$$

$D_{u1}^0<0$.

This gives a downward sloping D_u^0 curve on the "D_u–p_u/p_f" plane (Figure 3).

Now, we consider the determination of equilibrium values, i.e. $(p_u/p_f)^*$, α_u^{0*}, D_u^{0*}, S_u^*, Y_u^* and L_u^*. It is to be noted that $(p_u/p_f)^*$ is effectively determined by equation (i) as:

$$(p_u/p_f)^*=a_{fu}^0/(1-\beta_u^0) \qquad\qquad ………(i)'$$

Putting equation (i) in equation (iv) we get,

$$\alpha_u^{0*}=\alpha_u^{0*}[(p_f/p_u)^*] \qquad\qquad ………(vii)$$

From our characterization of S_u (as demand-determined) and equation (vi)' we can find out S_u^* by solving the following equation:

$S_u = D_u^0$ … … …(viii)

Putting equations (i)', (vii) and $F=F^0$ in expression (v) and then using equation (viii) we get,

$S_u^* = D_u^{0*} = [(1-\beta_u^0)/a_{fu}^0].\alpha_u^{0*}.F^0$ … … …(ix)

This equilibrium is shown graphically by point E in Figure 3.

Furthermore, using $I_u^0 = 1$ equation (ix) gives:

$Y_u^* = L_u^* = [S_u^*/(1-\beta_u^0)] = [(\alpha_u^{0*}.F^0)/a_{fu}^0]$ … … …(x)

This last equation clearly shows that equilibrium output in NFS is determined by the level of food-supply to this sector (i.e. $\alpha_u^{0*}.F^0$), given a_{fu}^0.

Now, in presence of NFS only $(1-\alpha_u^{0*})$ fraction of the aggregate food-supply is directed to the FS. Thus, FS faces shrinkage of food-supply to $[(1-\alpha_u^{0*}).F^0]$ from F^0 (which would have been the supply of food to FS in absence of NFS). This supply-side squeeze reduces potential employment and output in FS. The size of real domestic exports is reduced accordingly and hence, FS contracts which is reflected by the movement of equilibrium position from E_1 to E_4 in Figure 2. Conversely, in presence of FS there is demand as well as supply-side squeeze on NFS reducing output and employment in this sector. Thus presence of one sector implies contraction for the other as both FS and NFS compete for the same set of resources represented by the generic food-constraint.

Proposition IV: We have a basic conflict between the FS and NFS in terms of employment and output in presence of agricultural-supply-constraint.

This fundamental conflict marks a significant departure from the orthodox literature which hides the very existence of NFS in traditional economy and thereby conceals the FS – NFS conflict. Moreover, this contradiction is found to be intensified with the introduction of development strategies intended to "modernize" the less-developed-economy.

2.5. Green Revolution

There are several studies (Hazell and Haggblade, 1990; see also, Lanjouw and Lanjouw, 2001) which try to support Mellor's (1976) hypothesis that green revolution generates increased demand for locally produced labor-intensive non-farm goods and

services. But, the assertion that even the big farmer class could be the driving force for non-farm growth has been questioned by several researches (Harriss, 1991; Dunham, 1991; Saith, 1992).[19]

Green revolution implies rise in agricultural productivity. But in many cases it has caused land alienation for the small farmers leading to concentration of ownership (as mentioned earlier in endnote 6).[20] All these imply a rise in marketable surplus of food, F and a fall in n_1 representing a rise in land-ownership concentration.

Thus, F^0 rise to say, F', while n_1^0 falls to say, n_1'. Hence, equation (iv) is modified as,

$\alpha_u' = \alpha_u'(p_f/p_u, \theta, n_1', n_2^0) = \alpha_u'(p_f/p_u)$ … … …(iv)'

Now, using equations (iv)' and F=F', we have from equation (vi),

$D_u = D_u'(p_u/p_f, \alpha_u', F') = D_u'(p_u/p_f)$ … … …(vi)''

Comparing equations (iv) and (iv)' we can summarize:

$\alpha_u^0 < \alpha_u'$ as $n_1' < n_1^0$. Hence, in spite of $F' > F^0$, comparison between equations (vi)' and (vi)'' generates ambiguous result. Thus, $D_u' >$, $=$, or $< D_u^0$. Consequently, the direction and extent of shift of the D_u^0 curve (Figure 3) is ambiguous and it depends on the extent of variations of F and n_1.

Given equation (vi)'', the equilibrium condition (viii) is modified as,

$S_u = D_u'$ … … …(viii)'

Putting equations (i)', (iv)' and F=F' in expression (v) and then using equation (viii)' we get a modification of equation (ix) and accordingly the new S_u^* as,

$S_u^{*'} = D_u^{'*} = [(1 - \alpha_u^0)/a_{fu}^0]. \alpha_u^{'*}.F'$

Consequently, modifying equation (x) with F = F' we have,

$Y_u^{*'} = L_u^{*'} = [(\alpha_u^{'*}.F')/a_{fu}^0]$

As, $\alpha_u^0 < \alpha_u'$, the resultant impacts on S_u, Y_u and L_u are ambiguous. Only if the effect of rise in F dominates the contractionary effect of fall in n_1, agricultural supply constraint gets relaxed. Consequently, demand for NFS products rises as well. This demand and supply side boosts help NFS to grow. However, contrarily, if the effect of rise in F is dominated by the contractionary effect of fall in n_1, the NFS even contracts.

As the effect on α_u is contractionary, the value of $(1 - \alpha_u)$ rises. Hence, as F rises along with $(1 - \alpha_u)$ increase, the volume of supply of agricultural commodities to FS, i.e.

[(1-α_u).F] expands. Consequently, the effect of green revolution on FS is unambiguously positive.

Proposition V: Rise in agricultural productivity initiated through a policy of green revolution will have ambiguous effect on NFS, but it surely has expansionary impacts on FS.

If, however, green revolution occurs having distinct technological bias in favor of the rich farmers (as has happened in India), it is quite likely that the strong effect of fall in n_1 on α_u outweighs the effect of rise in F. Consequently, green revolution in agriculture squeezes down the NFS.

2.6. Crop-diversification and Contract Farming

In several developing countries withdrawal of government subsidy, deregulations of agricultural commodity trade, dismantling of public distribution system and many such contractionary policy steps are discouraging basic food-crop producing agriculture. On the contrary, export possibilities for certain sophisticated food items as well as shift of tastes and preferences of the richer sections of domestic population towards such products have induced "high-value-crop" (HVC) cultivation (World Bank, 2005, 2007). We try to capture the impacts of such "crop-diversification" in our following analysis.

HVC farming could serve well the course of modernization by providing (processed) food to the relatively well-off population engaged in FS and through supply of raw material for sophisticated processing meant primarily for exports (Sidhu, 2005; Singh, 2004). On the other hand, HVC cultivation could be a better option for farmers only if they have access to modern storage–processing–transportation facilities or have the ability to get attached with the big agro-business firms through corporate "contract farming" (Dev and Rao, 2005; Kumar, 2006). Thus, the whole chain of crop-diversification–processing–packaging–retailing could only be organized through firm–farm contract (Rao et. al, 2006; Sen and Raju, 2006). However, such contract farming ensures use of modern inputs and modern farm-services creating diversion of purchasing power in favor of "big city" products and thereby initiating substantial leakage of potential demand away from the labor-intensive NFS. On the other hand, agricultural diversification may jeopardize local and household level food security

creating significant supply-side squeeze on NFS. Hence, agriculture – NFS complementarities (symbiosis) are replaced with a tacit conflict and development of "modern" agriculture displaces rural non-agricultural population.

Let us assume that crop-diversification is not raising the level of agricultural productivity as such, it is rather occurring at the cost of crop-substitution.[21] Hence, F remains unchanged. However, with crop-diversification there is a clear fall in n_2. On the other hand, there is an induced decrease in n_1 due to the operation of two effects. First, with diversification there is land-alienation to some extent, especially for the small and marginal farmers who cannot independently practice diversified agriculture and transfer land rights to the bigger ones.[22] Secondly, as crop-diversification is practiced by large agro-business firms under the institutional arrangement of contract farming, small and marginal farmers lose their independent decision-making power. This snaps the linkages between small farms based agriculture and NFS. The consequent effect on NFS is similar to that of increasing land-concentration.

As both n_1 and n_2 fall, from equation (iii) we can say that there is a clear decline in α_u from its initial value, $\alpha_u{}^0$.

Now, with unchanged F and reduced value of α_u, from equation (vi) it is clear that D_u falls unambiguously from its initial value of $D_u{}^0$ as derived from equation (vi)'. Consequently, $D_u{}^0$ curve in Figure 3 should shift to the left.

Given the fall in the value of D_u, we can infer from our basic model that the equilibrium values of S_u Y_u and L_u must also fall unambiguously. Thus, NFS contracts.

On the other hand, as crop-diversification is practiced with crop-substitution, α_u falls unambiguously. Hence, $(1-\alpha_u)$ rises, raising the value of $[(1-\alpha_u).F]$. Thus, the FS gets a crucial supply-side inducement for expansion. This sector is doubly benefited if diversification of agriculture occurs through extensive cultivation and/or increase in cropping intensity, which raise the value of F over and above the increase in $(1-\alpha_u)$.

Proposition VI: The effect of crop-diversification on NFS crucially depends on whether it takes place through extensive cultivation and/or increase in cropping intensity or through crop-substitution. Diversification with crop-substitution and contract-farming unambiguously reduces the size of NFS. However, the corresponding effect on the FS is definitely positive.

Thus, the two comparative static analyses capturing the effects of green revolution and crop-diversification could be summarized in the following way: First of all, with modernization there is increasing dichotomization of the third world agriculture. While the modern and diversified segment of agriculture gets integrated with the modern FS having mutually beneficial effects, a large part of it still remains traditional. Secondly, modernization and segmentation of agriculture even though feeds the process of accumulation and growth in FS from the supply-side, this very process induces a contraction of NFS.

The contraction of NFS, in its turn, creates the "surplus population" as the mass of dispossessed cannot be employed in FS even though this sector is experiencing growth. We also argue that, this "surplus population" gets engaged in the informal sector (INFS).[23] Thus, a new form of dualism is produced endogenously through the process of growth of modern sectors and through modernization of parts of agriculture supporting this growth.

In spite of such a process of expansion of the sphere of accumulation a large part of the economy still remains non-capitalistic. There still remains the traditional agriculture and NFS of significant size outside the domain of capital. However, what is new is that, now we have a third component beyond the modernizing economy, i.e., the endogenously produced INFS. Conceptualization of this INFS and analyses of its interactions with other sectors constitute the next part of our paper. This formalization also brings out crucial departures from the orthodox literature.

III. FORMAL-INFORMAL DUALISM: COMPLEMENTARY OR CONFLICTING?

3.1. Basic Features and Notations of our Economy incorporating INFS
3.1.1. The Features are as follows:
(a) There are six sectors of a closed economy: a capitalistic FS, a modernized segment of agriculture producing HVC, a small farm based traditional agriculture producing low-value-food, non-capitalistic NFS and INFS and lastly the government sector.
(b) FS, modernized segment of agriculture and the government behave and also interact with each other in the same fashion as that of agriculture-FS-government inter-

linkage described earlier. The additional characteristic is that in the present case the total amount of marketable surplus of HVC is directed only to FS.

(c) The behavior of NFS and its interaction with agriculture is very similar to that discussed earlier with the additional feature that currently NFS interacts only with the traditional segment of agriculture producing low-value-food.

(d) Even if productions in both NFS and INFS are organized with the sole objective of consumption, there are subtle differences between the two. While NFS is essentially a subsistence economy of "petty commodity producers" without any net surplus (over and above food and non-food consumption and reproduction requirements), INFS is capable of producing surplus though it is not used for accumulation. Thus, "maximization of need" is the objective of production in INFS; it is the "need economy".[24] This implies that, the real income in NFS remains at the subsistence for all levels of output and employment. But, we will see below that, the real income in INFS can increase depending on the expansion of food-supply to this sector. However, this increase in real income only improves the food and non-food consumption standard and does not trigger off accumulation.[25]

(e) Though INFS is self-sufficient in both implements and non-food consumption and though there is surplus labor, it has to depend on agriculture for food. Food is obtained with the proceeds received through sale of output produced in it to agriculture. Thus agriculture-INFS trade is balanced.

(f) The rehabilitation of surplus population in INFS takes place in two alternative ways. First, INFS is boosted through the practice of "service sub-contracting" by FS which spends a part of its income to get its raw materials processed by the INFS (though sometimes commodities produced in INFS are also used in FS, labor-service constitutes the major part; hence such an assumption). Thus, INFS registers an "export surplus" vis-à-vis FS.[26] Secondly, the INFS is supported by government financing either through new money creation or by siphoning off expenditure on FS. This intervention is the crux of contemporary "development management" where government promotes INFS through different types of financing programs.

3.1.2. Notations are as follows:

(A) Notations (i) through (xxiii) of the section (2.3.2) and others used in section (2.4) are used with appropriate modifications.

(B) Few additional notations are required. Those are:

(i) Y_n: Level of INFS output. (ii) p_n: Price of INFS output. (iii) L_n: Aggregate employment in INFS. (iv) S_{fn}: Supply of food to INFS. (v) a_{fn}: Per capita food-consumption in INFS. (vi) F_1: Aggregate marketable surplus of high-value-crop of modern agriculture. (vii) F_2: Aggregate marketable surplus of low-value-crop of traditional agriculture. (viii) p_{f1}: Price of high-value-crop. (ix) p_{f2}: Price of low-value-crop. (x) D_{f1}: Aggregate food-demand from FS. (xi) D_{f2}: Aggregate food-demand from INFS. (xii) α_n: Fraction of aggregate agricultural income or that of aggregate marketable surplus of food used for transaction with INFS.

3.2. Working of our Extended Model

3.2.1. Interaction between FS, INFS, Agriculture and the Government

1. The interaction between FS, modern agriculture and the government is operating just as that between FS, agriculture and government as discussed in section 2.4. Hence, the corresponding analysis remains unchanged even in the present case.

2. Leakage of purchasing power from FS to INFS as FS practices service sub-contracting:

First, equation (7.1) is modified as:

$Y = \alpha.Y + I^0 + \theta^1.(G^0/p_{f1}) - a.Y$

Where, $\theta^1 = (p_{f\,1}/p_i)$, which is fixed just as θ in equation (3.2).

Here, p_f is replaced with p_{f1} as now, agriculture is divided into modern and traditional sectors and FS interacts only with the modernized segment. Secondly, "a" stands for fixed amount of INFS output (mainly labor-service) required to produce each unit of FS output and hence, the value (a.Y) is nothing but the "import surplus" of FS *vis-à-vis* INFS.

Subsequently, with $I^0 = 1$ as before, we have modification of equation (7.2) as:

$L = \alpha.L + I^0 + \theta^1.(G^0/p_{f1}) - a.L$

Solution of this gives us:

$L^* = [I^0 + \theta^1.(G^0/p_{f1})]/(1-\alpha+a)$ … … …(a)

Using equation (10) and modifying equation (10.1) with equation (a), we get a modification of equation (10.2) as below:

$D_{f1} = a_f^0.[I^0 + \theta^1.(G^0/p_{f1})]/(1-\alpha+a)$ … … …(b)

$D_{f11} < 0$.

Equation (b) gives us a negatively sloped curve on "D_{f1}-p_{f1}" plane as in Figure 4.
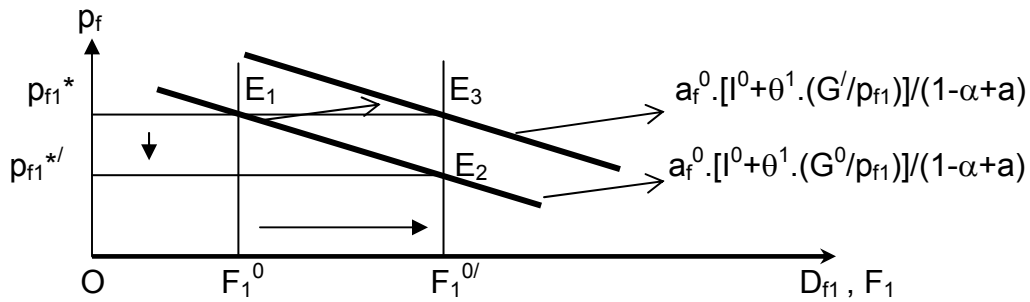

Figure 4: Food-market equilibria for modern agriculture – FS interaction

Now using the assumption of a given marketable surplus of high-value-food, $F_1 = F_1^0$, we can derive the food-market equilibrium condition by modifying equation (12) as:

$F_1^0 = D_{f1} = a_f^0.[I^0 + \theta^1.(G^0/p_{f1})]/(1-\alpha+a)$ … … …(c)

Solving equation (c) we can have p_{f1}^* as shown in figure 4. This also solves for the equilibrium values of Y, L, g, p_i, w_m and D_{f1}.

An interesting result comes out by comparing equations (12) and (c). Even if there is a leakage of purchasing power from FS to INFS due to sub-contracting, the equilibrium levels of output and employment remain the same in FS with only a fall in equilibrium price of HVC if the condition, $F^0 = F_1^0$ is satisfied. This happens because, the leakage of demand from FS on account of purchase of inputs (services) from INFS is just counter-balanced by an adequate expansion of real domestic exports under the condition of unchanging HVC supply to FS and given the income distribution between FS and modern agriculture. Moreover, there is the additional gain of INFS employment. Thus, the overall non-agricultural employment rises. However, to sustain this there has to be an adequate supply of food to INFS. Hence, there is no demand-side conflict as such between FS and INFS, the problem lies with the agricultural supply-constraint. It could

be shown that, in absence of domestic exports a demand-side conflict may indeed appear which, however, is conditional upon the existence of FS-INFS unbalanced trade.

3. Government provides developmental grants to INFS by siphoning off its expenditure on FS:

Given the state of adequate food-supply to both FS and INFS, the government can undertake expansionary policies to improve the conditions of production and consumption in INFS through fiscal measures. However, the counter-argument is that, this expansionary policy crowds out government expenditure that supports accumulation and growth in FS. But, in our model, even if a part of government expenditure is siphoned off to support INFS, there is no change in the size of the real domestic exports and hence no change in the levels of output and employment in FS, provided the level of food-supply to this sector remains unchanged. If nominal government expenditure on FS falls owing to diversion of fund to finance INFS, real domestic exports comes back to the initial level through price-wage fall, given the food-supply to FS. If, on the other hand, government finances INFS with new money creation the issue of crowing out is completely ruled out.

This whole analysis indicates that there is no demand-side conflict between FS and INFS. However, we express our doubts. We propose, even if it may seem that valorization of INFS is a costless process, in fact there is a supply-side trade-off involved in this case. To show this supply-side conflict involving INFS we have to bring in the issue of necessity of food for the very existence of this sector.

The linkage between FS and INFS obviously influences the levels of output and employment of the INFS. In fact, when FS expands, there is demand-driven expansion of L_n as a part of surplus labor gets engaged in informal activities. However, even if the expansion of FS raises the levels of employment in INFS, the corresponding effect on real income measured in terms of food solely depends on the interaction between INFS and agriculture. Now, there could be two alternative sources of food for INFS: the HVC producing segment or the traditional agriculture.

First we assume that the INFS is able to purchase HVC. The only revision of the modern agriculture-FS interaction that we have here is: instead of the whole amount of marketable surplus of food (F_1) only a positive fraction is directed to FS. Thus,

ultimately, Y^* and L^* as derived in absence of INFS are reduced in presence of INFS. We have a conflict between FS and INFS in terms of employment and output in presence of the generic agricultural-supply-constraint.

The logical reactions from the FS beneficiaries to this conflict could be to advocate for such policies that disentangle modernized agriculture from INFS and bring it closer to FS so that there is unhindered supply of HVC. Under such a situation the only option left for INFS is to depend on traditional agriculture. In fact, given the high prices of the products of modernized agriculture this seems to be a more logical option for INFS. However, this only transfers the FS-INFS conflict to the traditional economy, as a new conflict arises between INFS and NFS, given the food-supply-constraint set by traditional agriculture.

3.2.2. Interaction between Traditional Agriculture, INFS and NFS

We first formalise agriculture – INFS interaction. At the very outset we reiterate that now both INFS and NFS depend on traditional agriculture producing cheap food.

As the INFS is not a subsistence sector, its real income measured in terms of food should vary with agriculture – INFS t-o-t. Hence, we can specify the per capita food-demand in INFS as:

$a_{fn} = a_{fn}(p_f/p_n)$, with $a_{fn1} < 0$.[27]

Hence, aggregate demand for low-value-food from INFS is:

$D_{f2} = a_{fn}(p_f/p_n).L_n$

Assuming the initial value of L_n to be L_n^0, we have,

$D_{f2}^0 = a_{fn}(p_f/p_n).L_n^0$

In the INFS product-market there are many small producers and the competitive environment sets an upper-limit on price. The small producers cannot increase prices immediately and commensurately with fluctuations in costs out of fear of loosing market share. However, the distinctive character of community collaboration (sharing) restricts the prices from falling to the minimum subsistence requirement either. Thus, long-term collaborative relationship among the producers, on one hand and between producers and consumers on the other, make the prices rigid in the short-run.[28] Furthermore, the modern FS while practicing sub-contracting prefers stable contracts with the sub-

contractor and hence a stable price is a suitable assumption. Consequently, we assume constancy of p_n (=p_n^0, say).

A part of income per unit of INFS output (i.e., a part of p_n^0) is used for self-consumption and reproduction and another part is used to purchase food from traditional agriculture. The food-cost determines the residual income which is spent for non-food consumption and reproduction. Furthermore, as food-cost rises, the agents of INFS absorb this shock by reducing non-food expenditure, i.e., by cutting down "surplus consumption". This is possible as initially the INFS producers are able to maintain their consumption-standard above the minimum subsistence level. Thus, with sticky INFS price, as food-price increases due to fall in food-supply, given price-inelastic per capita food consumption in INFS, fraction of expenditure on food rises reducing the corresponding fraction on non-food. This is plausible given the surplus producing ability of INFS producers.

Now, given $p_n = p_n^0$, aggregate demand for low-value-food from INFS becomes:

$D_{f2}^0(p_f/p_n^0, L_n^0) = a_{fn}(p_f/p_n^0).L_n^0$

As $a_{fn1} < 0$, $D_{f2}^0{}_1 < 0$. Moreover, $D_{f2}^0{}_2 > 0$.

Consequently, we have a negatively sloped D_{f2}^0 curve on "$D_{f2}-p_{f2}/p_n^0$" plane as in Figure 5. Furthermore, as L_n increases (decreases), D_{f2} curve shifts to the right (left).
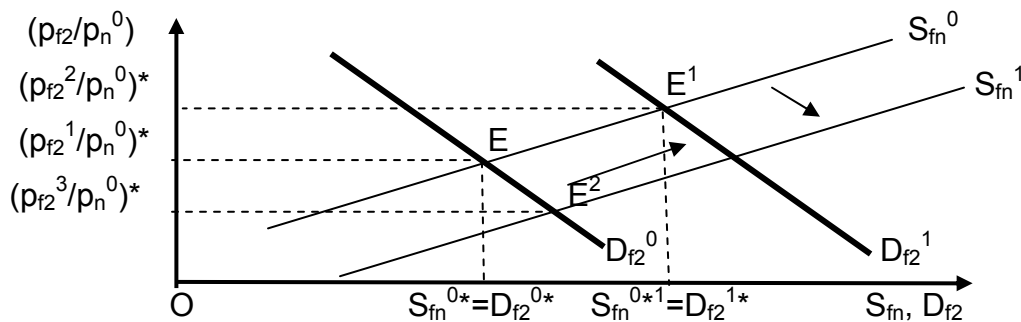

Figure 5: food-market equilibria for agriculture-INFS interaction

Next, we turn to the issue of food-supply to INFS. Let us first assume that the aggregate value of marketable surplus of low-value-food is given. Hence, $F_2 = F_2^0$.

We know, α_n fraction of aggregate income of traditional agriculture is spent on INFS products and hence, under balanced agriculture-INFS trade, INFS obtains the same fraction of marketable surplus of food.

We assume α_n to be dependent on agriculture – NFS and Agriculture – INFS t-o-ts. Hence,

$\alpha_n = \alpha_n(p_{f2}/p_n, p_{f2}/p_u)$

$\alpha_{n1} > 0, \alpha_{n2} < 0$.

Using equation (i) (of last section with the obvious replacement of p_f by p_{f2}, as NFS interacts only with traditional agriculture) and $p_n = p_n^0$, we can formulate:

$\alpha_n = \alpha_n (p_{f2}/p_n^0, (1-\beta_u^0)/a_{fu}^0) = \alpha_n (p_{f2}/p_n^0)$

$\alpha_{n1} > 0$.

Using $F_2 = F_2^0$ and the expression for α_u, we can formulate the food-supply to INFS as:

$S_{fn}^0(p_{f2}/p_n^0, F_2^0) = \alpha_n(p_{f2}/p_n^0).F_2^0$

As $\alpha_{n1} > 0$, $S_{fn}^0{}_1 > 0$. Moreover, $S_{fn}^0{}_2 > 0$.

This gives us a positively sloped S_{fn}^0 curve on "$S_{fn}-p_{f2}/p_n^0$" plane as in Figure 5. Furthermore, as F rises (falls) S_{fn} accordingly shifts to the right (left). As (p_{f2}/p_n^0) rises, given the t-o-t between agriculture – NFS as before, INFS product becomes relatively cheaper compared to NFS output. Hence, a larger share of income of traditional agriculture is spent on INFS reducing the proportion of expenditure on NFS. Under balanced trade this implies increased food-supply to INFS. This is captured by the positive slope of S_{fn} curve.

Now, we consider determination of equilibrium values of the variables, (p_{f2}/p_n^0), a_{fn}, α_n, D_{f2}^0, S_{fn}^0. These values could be derived by solving the equation:

$S_{fn}^0 = \alpha_n (p_{f2}/p_n^0).F_2^0 = D_{f2}^0 = a_{fn}(p_f/p_n^0).Y_n^0$ … … …(d)

Point E (figure 5) represents the solution of equation (d).

Here we have flexible t-o-t between INFS and traditional agriculture. Stated alternatively, to get additional units of INFS output the traditional agriculture has to guarantee higher real income in terms of food for all the agents working in INFS. Thus, increase in L_n and hence, that of Y_n as well are ensured through the inducement of increment in real income raising the value of a_{fn}. This endogenous movement of t-o-t in

favor of INFS and away from traditional agriculture is possible only through a rise in cheap food-supply to INFS.[29] Thus with a rise in food-supply, i.e., with a rightward shift of S_{fn} curve, the volume of agriculture – INFS trade expands and thereby agriculture receives higher amount of INFS output. Moreover, this increased volume of trade operates with tilting of t-o-t in favor of INFS. As food-supply to INFS increases, it gets absorbed through simultaneous rise in both a_{fn} and L_n. Thus, traditional agriculture is not facing any "realization problem", even if there is no government intervention. It is possible because the sole objective of production in both INFS and traditional agriculture is satisfaction of "need".

On the other hand, an exogenous rise in INFS employment (say, through government financing) shifts the D_{f2} curve altogether to the right. Under such expansionary situations employment in INFS rises unambiguously. But, the corresponding impact on real income measured in terms of food depends solely on food-supply to this sector. If food-supply does not increase commensurately, this expansion of INFS employment, in fact, reduces the real income for its agents. Thus, agricultural supply becomes crucial for INFS growth.

3.3. Rise in Agricultural Productivity through Technical Progress
3.3.1. Rise in Marketable Surplus of High-value-food

As the supply of high-value-food rises owing to technological progress, food-price falls leading to fall in w_m and p_i. As a result, FS output and employment expand through the consequent rise in real domestic exports given the nominal government expenditure. On the other hand, under this condition of rise in agricultural productivity, an appropriate rise in nominal government expenditure on FS can raise the level of real domestic exports without any change in prices. The expansionary effects of the rise in marketable surplus of high-value-food (from F_1^0 to $F_1^{0/}$) on FS are shown in Figure 4. Under the condition $G=G^0$, the economy moves from E_1 to E_2. However, with rise in food-supply if nominal government expenditure on FS also rises from G^0 to $G^/$, the economy moves to E_3.

Given this expansion of FS, INFS also expands via sub-contracting. This generates more of employment in presence of surplus labor. Expansion of INFS employment, in its

turn, creates excess demand for low-value-food. This shifts the D_{f2}^0 curve to D_{f2}^1 as in Figure 5. It induces the food-market equilibrium to move from E to E^1. Consequently, the agriculture-INFS t-o-t rises to $(p_{f2}^2/p_n^0)^*$. Hence per capita food consumption in INFS (i.e. a_{fn}) has to fall. On the other hand, as (p_{f2}/p_u) is fixed, this rise in (p_{f2}/p_n^0) reduces the value of (p_n/p_u). Thus, INFS product becomes cheaper for traditional agriculture relative to NFS output. As a result, the share of expenditure of traditional agriculture on INFS, i.e., α_n rises and that on NFS, i.e., $(1-\alpha_n)$ falls. Under agriculture-INFS balanced trade this also implies increased supply of food to INFS. Hence, we have movement of equilibrium along S_{fn}^0.

Ultimately, though employment rises in INFS, there is a fall in real income measured in terms of food. But the most significant outcome of this process is that INFS expands at the cost of contraction of NFS. As $(1-\alpha_n)$ falls, given $F_2=F_2^0$, $[(1-\alpha_n).F_2^0]$ falls as well. This implies squeezing of food-supply to NFS. Consequently, NFS contracts with fall in output and employment, though real income in this sector remains unchanged with fixed agriculture-NFS t-o-t.

Proposition VII: With rise in productivity in HVC sector both FS and INFS expand in terms of employment. But it occurs on one hand at the cost of declining real income in the latter and on the other at the expense of contraction of NFS.

This constitutes the fundamental contradiction of development management. Modernization of agriculture and FS creates surplus population which is rehabilitated in INFS. However, this rehabilitation generates furtherance of contradiction shifted to non-modern segment of the economy.

3.3.2. Rise in Marketable Surplus of Low-value-food

Let us now assume that due to improvement in productivity in traditional agriculture production of low-value-food rises, which raises the level of marketable surplus F_2 as well. Generation of this surplus simultaneously creates excess demand for INFS output, which is captured in Figure 5 by a movement of food-supply curve from S_{fn}^0 to S_{fn}^1. This induces expansion of output in INFS by inducing a real income rise and hence, an increase in employment. The result can be shown with the help of Figure 5 as the

movement of equilibrium position from E to E^2. Consequently, demand for food from the INFS rises and thereby the surplus output of traditional agriculture gets absorbed.

However, as (p_{f2}/p_n) falls from $(p_{f2}^1/p_n^0)*$ to $(p_{f2}^3/p_n^0)*$ keeping (p_{f2}/p_u) unchanged share of expenditure of agriculture on INFS (also share of food-supply) i.e., α_n falls. Hence the impact of rise in F on INFS is countered by a fall in α_n. But, the resultant impact is a rise in $[\alpha_n.F_2]$ which is captured by the movement of equilibrium from E to E^2.[30]

Let us now turn to agriculture-NFS interactions. As F_2 rises, we have seen that α_n falls. Thus, $(1-\alpha_n)$ rises and hence there is more than proportionate rise in food-supply to NFS (as both F_2 and $(1-\alpha_n)$ rise). This unambiguous rise in $[(1-\alpha_n).F_2]$ also raises the demand for NFS product from agriculture pushing up employment and output in NFS. This could be represented with figure 3 by a rightward shift of D_u curve.

On the other hand, an interesting outcome of this rise in output of traditional agriculture is that there is no impact on FS.

Proposition VIII: Increase in the level of marketable surplus of low-value-food raises real income and hence output in INFS. NFS gains more than proportionately in terms of employment and output, real income remaining fixed. However, it has no impact on FS.

The political-economic implication of this result is that neither the capitalists nor workers of the FS nor the farmers of the modern agriculture would be interested in the development of traditional agricultural sector.

3.4. Rise in Nominal Government Expenditure on INFS

Now we consider a policy of promotion of INFS employment through transfer of developmental grants from the government. If a part of nominal government expenditure on FS is siphoned to induce INFS growth, we have seen earlier that it has no impact on FS so long as the supply of HVC to FS, i.e. F_1 remains unchanged. However, this will have impacts on INFS and NFS. As INFS employment expands due to expansionary policy of the government, demand for food from this sector rises pushing up p_{f2}. This raises the value of (p_{f2}/p_n^0) keeping (p_{f2}/p_u) unchanged. This implies that for low-value-food producing agriculture the INFS product becomes relatively cheaper compared to NFS output. It leads to reallocation of demand in favor of INFS and away from NFS

product. Hence, we have a rise in α_n. Consequently, $[\alpha_n.F_2]$ rises even if F_2 remains unchanged. Thus, increased fraction of food-supply and that of expenditure of traditional agriculture is now directed towards INFS. However, this implies a fall in $[(1-\alpha_n).F_2]$ leading to squeezing of both food-supply to and demand for NFS. Consequently, the D_u curve of Figure 3 shifts to the left inducing contraction of NFS. Thus, government effort to boost INFS squeezes the NFS in presence of food-supply-constraint facing INFS and NFS.

Proposition IX: This is the fundamental contradiction of development management: rehabilitation of the surplus population in INFS induces further expropriation within the traditional economy, as the INFS competes with NFS for given set of resources.

IV CONCLUDING REMARK

We have tried to explicate the different types of contradictions intrinsically present within the course of "doing development". The very process of generation of growth through modernization creates the mass of dispossessed due to conflict between the modern and traditional segments of the economy in presence of the generic food-supply-constraint. Moreover, rehabilitation of this vast surplus population within the INFS either through governmental support or through inducements from modern economy creates further conflict within the non-modern sectors with furtherance of dispossession as the valorized INFS competes with the non-farm traditional economy for resources.

NOTES

[1] UN-Habitat (2003) notes that "(w)ith respect to urban poverty and slums, greater state involvement is, in fact, necessary now more than ever, especially in developing countries, given increasing levels of urban poverty, decreasing levels of formal employment and growing levels of income inequality and vulnerability of the urban poor" (pp. xxvii). Similarly, in rural areas state support to poor and marginalized through micro-credit institutions, self-help groups and NGOs is assuming significant position.

[2] It is opined by the U.S. Secretary of State C. L. Powell that "microenterprise (our informal sector) provides hope and concrete tools for the world's poorest to improve their own lives and realize the basic dignity of self-sufficiency". It is also noted that "(a)s these businesses expand and integrate into the formal economies of their countries, they empower the world's poor, create higher incomes and more jobs, contribute to economic growth, and strengthen democratic societies" (Powell, 2004, p. 2). In fact for the past three decades, support for microenterprise development has been an important feature of U.S.

foreign financial assistance and a large part of it has been spent in building institutions to link small producers to large firms and lucrative markets (Simmons, 2004; see also Vasquez, 2004).

[3] We can refer for this distributional rigidity the works of Kaldor (1984), Thirlwall (1986) and Bhaduri and Skarstein (2003).

[4] The only case under which purchase of industrial products by agriculture creates home market is when such purchases are financed by loans from the industrial sector through the financial channel (using the instrument such as agricultural "commodity derivatives"). However, in the context of our study, the focus is on the role of expansion of agricultural output in creating a home market for industry. This does not happen even in the case under consideration.

[5] Ranis and Stewart (1993), contrary to Hymer and Resnick's (1969) claim of de-industrialization, point at significant existence of such activities in post-colonial Taiwan and Philippines. Moreover, during the initial years of planning in post-colonial India the existing small and cottage industry was considered as a very important source of cheap consumer goods and also a provider of sizeable employment.

[6] While commenting on modernization of Indian agriculture in post-colonial period Rao and Storm (1998) observes, "with growing commercialization, the poorer groups……..have lost control over much of their resources through privatization of communal lands, including grazing lands, waste lands, forests and water resources" (pp. 212). Furthermore, there is increasing inequality within the farming community also as the "small farmers are handicapped by lack of resources for technological modernization" (ibid. p. 221) On the other hand, they also note that "employment opportunities within agriculture have shrunk relative to the growth of the workforce" (ibid. pp. 213).

[7] Such alliances have been noted by Rao and Storm (1998, p. 217) in the context of New Agricultural Strategy of India. Recognition of existence of a "resilient mechanism for conflict management and transactional negotiations among the proprietary classes" of India can also be found in Bardhan (1998, p. 77). He argues that such a "political equilibrium of subsidies and patronage distribution" persists also in post-reform India (ibid. pp. 132-7).

[8] Production takes place with the sole objective of consumption. This is the crucial characteristic of NFS. See, Sanyal (2007 pp. 211-3) in this regard.

[9] Simple tools produced in NFS itself are used.

[10] Between agriculture and FS, on one hand and between the former and NFS, on the other.

[11] As we will see below, "basic-food-crop" producing agriculture is much more integrated with NFS, while the "high-value-crop" segment is linked with FS.

[12] Small farm based agriculture is closely linked with NFS, though the big farmer class allies with the beneficiaries of FS (see below).

[13] Unbalanced trade is financially unsustainable. Furthermore, it is only a simplifying assumption.

[14] We consider a situation where all the contending groups, capitalists and workers of FS and the farmers (specifically the large ones) form separate lobbies and all lobbies are equally strong. Therefore, we have rigidity of FS real-wage and product-wage and hence, rigidity of agriculture-FS t-o-t. On the other hand, agriculture-NFS distribution cannot be altered as NFS is a subsistence sector (see below).

[15] As we have assumed balanced trade between agriculture and NFS and a single (market) price for food, α_u represents fraction of both agricultural income and marketable surplus of food transacted with the non-farm sector.

[16] A part of wage-bill though spent on food, it fully comes back to FS as agriculture-FS trade is balanced.

[17] Since in our analysis we have assumed a fixed terms of trade, we can safely take food-supply as perfectly inelastic due to short-run natural, technical and institutional rigidities in agriculture. Furthermore, only a fraction of food-supply should go to FS in presence of NFS as we see below. However, for the time being we assume away such a presence of NFS. As we introduce NFS the relevant conditions will be modified.

[18] There is a vast literature supporting such a claim. See for example Saith (1992).

[19] Saith notes that "(a) widely cited feature of South Asian (and other poor agricultural) economies is a high degree of rural demand leakage through the pockets and spending patterns of the rural rich. The tastes and consumer preferences of this group are heavily biased in favor of items which are not produced by the rural non-farm sector" (1993, p. 17).

[20] We know Punjab (India) agriculture could reap the maximum benefits of green revolution in India. But at the same time it had experienced increasing concentration. The index of concentration of operational holding has risen sharply from 0.42 to 0.70 during 1970-1 to 1981-2, whereas for India as a whole this index has shown a marked decline during the same period (Mukherjee, 2007, p. 50).

[21] In India crop-substitution's contribution to diversification is 63.37 per cent, whereas for whole of South Asia it is 57.02 per cent (Joshi et al, 2004).

[22] WBHDR (2004) reports that, land-alienation for the small owners is "highest in those areas where the alternative use of land, typically by larger scale operations (e.g. extension of tea estates, brackish water fish cultivation etc), has become more profitable" (p. 41).

[23] UN-Habitat (2003) highlights the enormous growth of slums across all the third world countries. In fact, there is almost one-to-one correspondence between slum population and urban INFS. Similarly, the World Bank (2007) notes that across the developing regions rural non-agricultural activities are growing very fast. In India during the period 1999-00 to 2004-05 the change in formal employment has been nil and the increase in total employment has been only of an informal kind (NCEUS, 2007, p. 4).

[24] See, Sanyal (2007).

[25] For such a categorization of INFS we can refer Ranis and Stewart (1993 and 1994). In recent writings this INFS has been projected as a dynamic sector capable of producing surplus. However, the difference between FS and INFS is that while in the former production is organized for accumulation in the latter it takes place with the sole objective of consumption.

[26] Even if INFS gains only at the cost of "import surplus" of FS, this also benefits FS as its costs of production reduces. This type of policy of sub-contracting has become extremely popular among modern firms in many developing countries. Furthermore, the FS may also transfer funds to promote INFS, which can be considered as a mark of "corporate social responsibility".

[27] Per capita food-demand in FS is fixed through bargaining. But, in INFS a_{fn} depends only on food-availability, given the inability of INFS producers to change p_n unilaterally (see below).

[28] We can refer, Piore and Sabel (1984, p. 272-4), Tokman (1978), Mead (1984) and Varcin (2000) for different types of collaborative contracts among micro-entrepreneurs and consumers. Becattini (2004) notes that in case of the products of the micro-enterprises of industrial districts (similar to an INFS conglomeration) the prices are "affected by local demand and supply conditions, and, most importantly, by the stabilizing influence of local institutions, such as associations among…..producers, and the local customs" (pp. 27-8). These factors make the prices "sticky".

[29] With rise in food-supply as the food-price falls, it induces an increase in a_{fn}. But, given the price-inelastic food-demand in INFS, this reduces the share of expenditure on food raising that on non-food boosting up non-food consumption. Thus, increased food-supply improves the overall standard of living in INFS.

[30] The resultant impact on INFS depends essentially on the elasticity of the D_{f2} curve, i.e., on the elasticity of a_{fn}.

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